

IN THE CLAIMS:

1. - 28 (Cancelled)

29. (Currently Amended) A semiconductor laser device comprising;
a plurality of laser light oscillators that each emit a laser beam from a respective outlet;

a diffraction grating with vertical and horizontal grooves that cross each other and
that at least partially directs a sufficient portion of a laser beam from the plurality of laser light oscillators to enter another of the plurality of laser light oscillators to enable a phase locking of the respective laser light oscillators while transmitting the remaining portion of the laser beam, when the respective outlets of the laser light oscillators are aligned with the diffraction grating to enable each one of the laser light oscillators to receive at least a portion of the laser beam from another of the plurality of laser light oscillators to enable a phase locking of each one of the plurality of laser light oscillators, and

one or more condenser lenses, wherein the one or more condenser lenses receives the laser beam emitted from an outlet portion of the diffraction grating and the diffracting grating is positioned optically between the plurality of laser light oscillators and the one or more condenser lenses.

30. (Cancelled)

31. (Previously Presented) The semiconductor laser device according to Claim 29 wherein the diffraction grating is a flat plate.

32. (Previously Presented) The semiconductor laser device according to Claim 29 wherein the diffraction grating includes a hologram to collimate portions of the laser beams transmitted therethrough.

33. (Previously Presented) The semiconductor laser device according to Claim 29 wherein the laser light oscillators each have a refractive index guided self-aligned structure and are arranged parallel to each other.

34. (Previously Presented) The semiconductor laser device according to Claim 33 wherein each of the laser light oscillators include GaInP/AlGaInP quantum well active layers.

35. (Previously Presented) The semiconductor laser device according to Claim 29 wherein the diffraction grating directs between 10% to 30% of the incident laser beam to enter other laser light oscillators.

36. (Previously Presented) The semiconductor laser device according to Claim 29 wherein the diffraction grating directs the sufficient portion of the laser beam at an optical axis of another laser light oscillator.

37. (Cancelled)

38. (Previously Presented) The semiconductor laser device of Claim 29 wherein the plurality of laser light oscillators are arranged in a plurality of arrays, each array includes a plural number of laser light oscillators, the arrays are vertically stacked and the diffraction grating partially directs a sufficient portion of a plurality of laser beams from each array to enter laser light oscillators of other stacked arrays to enable a phase locking of all of the laser light oscillators.

39- 40. (Cancelled)

41. (New) A semiconductor laser device comprising:

a plurality of laser light oscillators that each emit a laser beam from an outlet thereof;

a diffraction grating that transmits a laser beam that is oscillated in at least one of the laser light oscillators and is emitted from an outlet thereof, so that a portion of the laser beam is incident on at least one of the other laser light oscillators,

wherein the diffraction grating is a flat plate which includes the diffraction grating on a main surface thereof, the main surface being an incidence plane of the laser beam, and the flat plate partially diffracts the laser beam on the diffraction grating at a predetermined angle when the diffraction grating partially reflects the laser beam,

wherein the diffraction grating directs -1st order diffracted light and +1st order diffracted light generated when the laser beam is partially diffracted, so as to be respectively incident on laser light oscillators that are adjacent to the at least one of the laser light oscillators from which the laser beam has been emitted, and

one or more condenser lenses, wherein the one or more condenser lenses receives the laser beam emitted from an outlet portion of the diffraction grating and the diffracting grating is positioned optically between the plurality of laser light oscillators and the one or more condenser lenses, and the plurality of laser light oscillators are included in a semiconductor laser array element, and

the diffraction grating is disposed so as to face the outlet of the at least one of the laser light oscillators, the diffraction grating being a translucent member that (a) partially

transmits the laser beam and (b) partially reflects or scatters the laser beam so that a portion of the laser beam is directed to the at least one of the other laser light oscillators.

42. (New) The semiconductor laser device according to Claim 41

wherein the plurality of semiconductor laser array elements respectively include substrate layers that have been cut out of one semiconductor wafer.

43 (New) The semiconductor laser device according to Claim 41

wherein the plurality of semiconductor laser array elements each have a real refractive index guided self-aligned structure.

44. (New) A semiconductor laser device comprising:

a plurality of laser light oscillators that each emit a laser beam from an outlet thereof;

a diffraction grating that transmits a laser beam that is oscillated in at least one of the laser light oscillators and is emitted from an outlet thereof, so that a portion of the laser beam is incident on at least one of the other laser light oscillators,

wherein the diffraction grating is a flat plate which includes a diffraction grating on a main surface thereof, the main surface being an incidence plane of the laser beam, and the flat plate partially diffracts the laser beam on the diffraction grating at a predetermined angle when the diffraction grating partially reflects the laser beam,

wherein the diffraction grating directs -1st order diffracted light and +1st order diffracted light generated when the laser beam is partially diffracted, so as to be respectively

incident on laser light oscillators that are adjacent to the at least one of the laser light oscillators from which the laser beam has been emitted, and

one or more condenser lenses, wherein the one or more condenser lenses receives the laser beam emitted from an outlet portion of the diffraction grating and the diffracting grating is positioned optically between the plurality of laser light oscillators and the one or more condenser lenses, and

wherein the plurality of laser light oscillators are included in a plurality of semiconductor laser array elements in such a manner that at least two laser light oscillators are included in each laser light oscillator in an array, the plurality of semiconductor laser array elements being stacked up, and

the diffraction grating is disposed so as to face the outlet of the at least one of the laser light oscillators included in one of the semiconductor laser array elements, the diffraction grating being a translucent member that (a) partially transmits the laser beam and (b) partially reflects or scatters the laser beam so that a portion of the laser beam is directed to the at least one of the other laser light oscillators included in the other semiconductor laser array elements.